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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
Amendment of the Commission's Rules Regarding the 37.0-38.6 GHz and 38.6-40.0 GHz Bands	)	ET Docket No. 95-183 RM-8553
Implementation of Section 309(j) of the Communications Act -- Competitive Bidding 37.0-38.6 GHz and 38.6-40.0 GHz	)	PP Docket No. 93-253

COMMENTS OF ADVANCED RADIO TELECOM CORP.

Submitted by:

Of Counsel:

Pierson, Burnett and Hanley
1667 K Street, N.W.
8th Floor
Washington, DC 20036

Phone: (202)466-3044
Fax: (202)466-3055

W. Theodore Pierson, Jr.
Executive Vice President and
General Counsel
Advanced Radio Telecom Corp.
1667 K Street, N.W.
8th Floor
Washington, DC 20006
Phone: (800)580-0ART
Phone: (202)466-5278
Fax: (202)466-3055

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SUMMARY

ART Supports The Principal Conclusions Of The *NPRM* And Interim Order.

- The 38 GHz Band is one of the great success stories in Commission regulation. Because of the unique licensing features, and the tremendous breakthroughs in millimetric wave technology, 39 GHz will provide significant competitive alternatives to traditional exchange services. The Commission should take no action that interferes with the early realization of this promise.

The Interim Processing Rules Are A Reasonable Solution To The Avalanche Of Applications -- So Long As The Commission Moves Quickly To Auction Open Channels And Awards Interim Point-To-Point Paths For Firm Customer Orders.

- There are current customers, including PCS providers, who need channels now and cannot await completion of an auction. The Commission should immediately license point-to-point paths, on a grandfathered basis, for *bona-fide* customers.

The Commission Must Impose Stringent Buildout Requirements.

- Stringent construction requirements are essential in order to: (a) ensure that the spectrum is used and not warehoused, (b) free up spectrum for other applicants and (c) remedy any abuses of the spirit of the Commission's policies that may have occurred.

- The *NPRM* construction proposal, while well-intentioned, is well beyond near-term manufacturing capacity and available capital.

  Instead, the Commission should require each permittee to: (1) install *one* permanent, fully operational, revenue-producing *link* in each *2500 square kilometer* subsection of the authorized service area by the end of the first *18 months;* (2) *one link* in each *250 square kilometer* subsection by the end of the *48 months;* and (3) *two links* in each *250 square kilometer* subsection by the end of *60 months,* **provided** that the requirement will be reduced for less populated areas.

- The Commission's proposal to apply the construction requirement to each channel is sound. However, imposing a traffic carrying requirement is too difficult to devise and to monitor, and would interfere with innovative uses.

The Commission Should Not Impose Any Limits On Transfers Or The Number Of Channels One Entity May Own Or Control

- Given the total amount of bandwidth available -- 3000 MHz -- there is little danger that several entities will control sufficient bandwidth to create monopoly conditions.

The Commission Must Adopt Liberal And Flexible Technical Rules To License The Full 37 GHz Band On A BTA Basis

- Full flexibility to provide any fixed or mobile service demanded by the marketplace that can be provided within the applicable technical rules.
- Continuation of co-primary status for mobile operations.
- Licensing of all of the 37 GHz band as soon as rules have been adopted.
- Adoption of the same channeling plan for 37 GHz as is used in 39 GHz to facilitate equipment production.
- The Commission should use BTAs -- no regional or national channels.
- The Commission should permit entities to license discrete paths in areas that have not yet been awarded.
- No required frequency stability limit.
- No required use of Antenna Standard A

Auctions Are The Best Method Of Awarding Licenses -

It Is Critically Important That Auctions Be Conducted In The 37 GHz And 39 GHz Bands Simultaneously.

- The pioneers at 39 GHz would be artificially handicapped unless they are allowed to bid for "white" areas around their existing license areas at the same time that the BTAs at 37 GHz are being awarded.

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COMMENTS OF ADVANCED RADIO TELECOM CORP.

Pursuant to Sections 1.415 and 1.419 of the Commission's Rules, Advanced Radio Telecom Corp., formerly known as Advanced Radio Technology, Limited ("ART"), hereby submits its opening comments in the above-entitled proceeding.

ART fully supports the basic principles of the Commission's *Notice of Proposed Rulemaking and Order* ("*NPRM*")[1], including the Interim Processing Policies, but does have several suggested changes in implementation of those principles.

I. INTRODUCTION AND REQUEST FOR LIMITED, INTERIM RELIEF.

The Commission and its staff are to be congratulated for the innovation and

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[1] *Notice of Proposed Rulemaking and Order*, 61 Fed. Reg. 2452 (1996); ET Docket No. 95-183, RM-8553 & PP Docket No. 93-253; FCC 95-500, adopted December 15, 1995.

perception that characterized their original rules for 38 GHz[2] and their subsequent processing procedures. The Commission's 38 GHz policies have laid the groundwork for one of the more notable telecommunications success stories -- one that is particularly timely in view of the emphasis on competition in local telecommunications in the Telecommunications Act of 1996.[3]

38 GHz radio systems are creating the first vibrant and viable wireless competition in the local exchange arena. The Commission's seminal decisions to: (1) allow channels capable of carrying DS-3 capacities (and more in the future) and (2) license on a geographic footprint basis (allowing additional links without additional applications), along with (3) its adoption of liberal technical rules, have enabled the two current 38 GHz operators to fulfill the widespread and growing demand for broadband wireless alternatives for the traditional wired local loops.

The current demand for 38 GHz services goes far beyond demand for mobile infrastructure. The major demand is for broadband local loops. This demand will, in comparatively short order, exceed the supply presently being assigned. In fact, there is current unfulfilled demand for channels for local loops and PCS backhaul in areas that the Commission has yet to authorize. Furthermore, technological breakthroughs on the drawing boards and in conceptual planning stages promise to greatly magnify the current

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[2] ART will follow the convention of using: the term "38 GHz" to refer to the entire range of the allocated band from 37.0 to 40.0 GHz; the term "37 GHz" to refer to the lower 1600 MHz, from 37.0 GHz to 38.6 GHz; and the term "39 GHz" to refer to the upper 1400 MHz, from 38.6 GHz to 40.0 GHz.

[3] S.652, "Telecommunications Act of 1996," 142 Cong. Rec. 11145 (1996). *See* Section II, "Development of Competitive Markets."

demand and lead to applications not yet conceived.

These developments counsel the Commission to stay the course of its present policies -- to maintain as much flexibility in technical rules as possible, elevating the prevention of unacceptable interference as the only regulatory benchmark, and relying on industry self-policing for enforcement. The extent of current demand and the pace of new competitive entrants in the provision of last mile telecommunications also counsel that the Commission take immediate steps to lift the freeze on new applications, on a limited, interim scale, to allow early commencement of service to customers whose needs cannot be satisfied otherwise.

Given the probable pace of this rulemaking and the probable timing of the awarding of authorizations, it is likely to be six to twelve months (and perhaps longer) before additional authorizations are forthcoming. However, ART currently has requests, and anticipates additional requests over the next several months, from Competitive Local Exchange Carriers ("CLECs"),[4] from Personal Communication Service ("PCS") providers and from end users, for immediate service in areas in which ART does not have a construction permit and in areas in which no 39 GHz provider has an authorization. Not fulfilling these requests prior to the probable date upon which additional authorizations are awarded pursuant to the final rules adopted in this proceeding would slow the pace of

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[4] CLEC is the preferred name for the recently-emerged companies that compete against the traditional incumbent Local Exchange Companies ("ILECs"), usually by installing fiber optic rings in downtown business districts and surrounding commercial cores. CLECs are also known sometimes as Alternative Local Telecommunication companies and were formerly known, when their range of services was circumscribed by state regulation and ILEC behavior, as Competitive Access Providers or CAPs. Their trade association is the Association for Local Telecommunications Services ("ALTS").

competitive entry into the local exchange market and, worse, would threaten to stifle the development of an economically viable 38 GHz industry.

The early adopters, and the customers whose acceptance or rejection will determine the fate of the 38 GHz industry, are largely themselves service providers to others. The territories of these customers (the CLECs and PCS providers) usually cross the boundaries of the typical 38 GHz licenses area. Often the CLEC or PCS provider wishes to contract for the provision of service in a number of states encompassing many 38 GHz areas. In order to service these customers, it is usually incumbent upon the 38 GHz licensee to be able to offer service throughout the entire area of the CLEC or PCS licensee. Because the areas in which service would be requested were impossible to forecast, it is quite likely that no single 38 GHz provider, and in many cases not even the collective group of 38 GHz licensees, will be able to satisfy these needs without additional authorizations.

ART submits that this situation mandates that the Commission take immediate action to afford interim relief, pending completion of this rulemaking and the granting of additional 38 GHz authorizations. To this end, ART will shortly file a petition with the Commission requesting that it allow any licensed 39 GHz carrier to file for a 39 GHz path in an unlicensed area.

The Commission staff should process such requests on an emergency, expedited basis. The applications would be granted only upon a suitable demonstration that there were customers who needed immediate service. The licenses would only cover the specific paths requested. The licenses would be grandfathered (as against the future

licensees of the geographic footprint), but only so long as the original customers continued to pay for the service requested.

At the present time, given the state of antenna technology, 38 GHz paths are rather narrow. 38 GHz currently is a point-to-point service. The typical beamwidth is only five degrees. This means that hundreds of different paths can be engineered in the typical 38 GHz license area. Consequently, the granting of a handful of specially-licensed paths within a service area in advance of the award of the license to a third party should not diminish the value of the area-wide license. In fact, by demonstrating the attraction of service in that area, the pre-operation of the specially-licensed links should enhance the value of the license and create a ready market for early customers for additional links from among the customers of the specially-licensed links. For these reasons, ART urges the Commission immediately to take up consideration of the Petition for Limited, Interim Relief that ART will file shortly.

II. INTEREST OF ART IN THIS PROCEEDING.

ART was founded in mid-1993 to build and operate broadband wireless facilities. ART is privately-held.[5] ART is one of only two companies that are significant operators

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[5] Advanced Radio Telecom, Corp., formerly known as Advanced Radio Technologies, Limited, is an affiliate of Advanced Radio Technologies Corporation ("ART Corporation"), which owns 34% of Advanced Radio Telecom. The two affiliates have a pending request for Commission permission to merge with Advanced Radio Telecom as the surviving entity. ART West is a joint venture between ART Corporation and Extended Communications and is ART's chosen vehicle to own 38 GHz licenses in the western 13 states. ART Corporation, through Advanced Radio Telecom, has a service agreement to manage up to 20 markets that have been applied for by DCT Communications. Thirteen of these applications have been granted. DCT is not affiliated with any of the ART

of 39 GHz systems.[6] ART purchased the existing 39 GHz operations of EMI Communications (two channels in each of 32 markets) and has received authorizations to construct and operate (or manage) 39 GHz operations in another 72 markets, totalling 104 operating markets at the present time. ART has the broadest geographic reach of any of the operating 39 GHz licensees. ART's corporate mission is to become the leading provider of wireless broadband telecommunications throughout the nation. ART, thus, has a vital interest in this proceeding.

III. DEMAND FOR 38 GHZ SPECTRUM IS EXPLODING.

Over the last several years, prices for millimetric microwave equipment have plummeted. Equipment that only three or four years ago cost approximately $50,000 for each link (two radios and ancillary gear) now lists at less than $20,000 and is available substantial additional discounts in significant volumes. Volume production of 38 GHz radios should produce further price reductions. Even more dramatic changes in equipment

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Companies. ART Corporation also has an option to purchase minority interests in authorizations granted to Telecom One, an unaffiliated reseller of long distance services. Telecom One has been granted two construction permits.

[6] The other major operator of 38 GHz systems is WinStar Wireless Fiber. WinStar purchased the construction permits granted to Avant-Garde for four channels in the top 25 markets and has received its own grants for one channel in another fifteen or so markets, for a present total of less than 45 markets. Several companies (the San Francisco Giants, Bay Area Teleport and LOCATE) have been licensed to construct and operate a limited number of 39 GHz systems for a several years. These companies may have operated these systems for specialized services in a limited number of geographic areas.

configurations are in the design phase[7] and promise to reduce broadband access costs toward the consumer level. Concomitantly with dramatic reductions in cost, equipment manufacturers have added significant new features and functions, including: adaptive power; software-controlled radios; smaller antennas; remote monitoring of links; sophisticated network monitoring; reductions in the electronics in the exposed, hard-to-reach system elements, etc.

The combination of price reductions and increased functionality, coupled with the large amount of contiguous bandwidth available and the unique and innovative geographic area licensing approach by the Commission, have created an increasing array of new services. For the first time, service providers can provide truly broadband radio paths. This in turn has lead to the creation of the first viable wireless broadband local telephone service. The demand for wireless local distribution services has been evident for some time; the ability to supply such service has not been, because the traditional telephone companies have failed to upgrade their copper-based "last mile" distribution infrastructure rapidly enough to meet demand.

Therefore, contrary to implications in parts of the *NPRM*,[8] the principal application for 38 GHz is not mobile radio infrastructure, but the "last mile" distribution of

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[7] The changes that are in the works are proprietary to ART and others and are highly confidential. ART, its vendors and development companies are willing to discuss the nearer term developments with the Commission staff under suitable conditions of confidentiality.

[8] *NPRM* at paras. 1, 7, 112; *see also* Chairman Hundt's Partial Dissent at 3-4, in which he assumes, mistakenly, that the rush for licenses was triggered solely by potential PCS uses.

broadband telephony. This is not to say that there is not demand for 38 GHz links to connect mobile radio base stations and switches. Clearly, there is, especially in PCS.[9] But the amount of spectrum that is needed for mobile radio infrastructure is orders of magnitude less than the amount of spectrum needed to satisfy the increasing demand for local telecommunications services.

For example, to extend the reach of the fiber optic ring of a CLEC to all of the tenants in a single "off-net" commercial office building often would require one to three DS-3s. To connect the typical PCS or cellular base station to the central switch for further routing would generally require one to four DS-1s. A DS-3 contains 28 times the bandwidth of a DS-1. Consequently, a typical broadband local wireless path would require up to 94 times the bandwidth of a typical mobile radio infrastructure circuit. Moreover, the disparity in bandwidth needs between the two is bound to increase with expected near-term increases of some substantial magnitude in data speeds.

For instance, one of the more promising near term uses of 38 GHz is to connect local area networks ("LANs") to each other in a campus environment or within metropolitan areas. A typical LAN installation transmits at either 10 mbps (which is the equivalent of six DS-1s) or 100 mbps (which is the equivalent of over two DS-3s). These broadband requirements far exceed the bandwidth needed by a typical mobile radio backhaul path.

Another area of demand that has recently manifested itself is Internet access. There is a growing litany of complaints among Internet users concerning the time that is

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[9] *See, e.g., NPRM* at paras. 1, 13.

occupied in the downloading of graphic and picture files. With the use, for instance, of the typical dial-up modem (transmitting at 14.4 kbps), accessing a ten megabyte graphics file on the Internet would take 90 minutes to download. But using DS-1 circuits provided by 38 GHz equipment, the same file could be downloaded in less than one minute.

These are but a few of the demonstrations of the near-term need for wireless broadband local loops. Although the magnitude of the demand over the next several years is difficult to fix accurately, the one certain fact is that the demand for affordable broadband communications links is growing rapidly and will be substantial.

There are a number of decisionally significant implications that flow from these industry developments and portends.

First, the degree of marketplace demand, rather than being overstated in the *NPRM,* as the Commission implies,[10] is understated. There is more than sufficient demand to justify an allocation of all of the 38 GHz band (the 37 GHz portion as well as the 39 GHz portion) to broadband point-to-point communications.

Second, the extent of demand mandates immediate and decisive steps to ensure that the assigned spectrum is put to the highest and best use. This requires that the licenses be awarded only to those who have the intent and means to install and operate now. This objective, in turn, requires: (i) no restraints on the expeditious processing of transfers, mergers, consolidations, joint operating agreements, and similar sharing arrangements; (ii) sufficiently stringent construction requirements to deter warehousing; (iii) continuation of the staff's current pace of action on pending applications that satisfy

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[10] *Id.* at para. 13.

the interim criteria; and, (iv) the use of auctions, because they undeniably are the surest, quickest and least resource-intensive means of ensuring that the licenses are put to the highest and best use.

Third, the extent of the present demand and the pace of growth dictate that the Commission act quickly to make some additional spectrum available, by auctioning the 37 GHz band and, simultaneously, the then-"white" areas in the 39 GHz band.

Fourth, the marketplace is sufficiently immature and dynamic to caution against any Commission action that preordains a particular service or straightjackets technical developments. The Commission should adopt only such technical rules as are necessary to prevent interference, with the marketplace as the initial arbiter.

IV. THE COMMISSION SHOULD IMPOSE STRINGENT CONSTRUCTION REQUIREMENTS.

In recognition of the need to ensure that legitimate operators have an adequate opportunity to build out their service areas as demand develops while protecting against warehousing, the Commission has laid out a stringent construction requirement. The *NPRM* proposes that each permittee be required to install "a minimum average of four permanently installed and operating links per hundred square kilometers" for each channel. The Commission also seeks comment on an alternative of 15 links per service area regardless of size and inquires whether the requirement should vary by market size and whether it should impose a minimum efficiency requirement, such as 1 bit per Hertz. *NPRM* at paras. 109-111.

ART agrees with the Commission that there is an urgent need to impose

significant construction requirements in order to ensure that there is no warehousing of spectrum and that serious operators have an adequate chance to obtain the spectrum necessary to operate. There is, moreover, a third reason to impose stringent construction requirements in this case.

There are several groups of permittees who coordinated applications for "friends and family" in a carefully (and successfully) orchestrated scheme to obtain grants of multiple channels in the same market. (We discuss this scheme in somewhat greater detail in the section below discussing transfer restrictions.)[11] ART believes that this scheme was contrary, at the least, to the spirit of the Commission's prior coordination rules and the Staff's September 1994 Policy Statement. Nevertheless, the validity of their conduct is not an easily resolved issue and may well have fallen within the letter of the Commission's rules.[12]

Given the rules and policies that were in place at the time, no *ex post facto* remedy is satisfactory in this situation. However, stiff construction requirements will, at least, ensure that the public interest in the swift utilization of these channels will be served. Furthermore, in the process of enforcement of the construction requirements, some of those who did abide by the Commission's rules (to their detriment) may be able to obtain some of the channels that they would have received if all parties had applied under the same criteria.

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[11] *Infra* at note 41.

[12] The applicants and permittees insist that their statements and conduct were beyond reproach and consistent with those Commission rules in place that had been duly adopted and implemented.

The Present Construction Requirement Is Plainly Inadequate. The present construction requirement, though sufficient when demand was much less and there was no shortage of channels, is plainly inadequate now.[13] The issue is what is the requirement that will best achieve the right balance between the conflicting goals of deterring warehousing and promoting the healthy growth of the 38 GHz industry.

The Proposal Of Four-Links-Per-Hundred-Kilometers Within 18 Months Is Unattainable And Unacceptable. Although well-intentioned, the Commission's principal proposal is far too drastic. The suggested threshold of four links per hundred square kilometers would not only entail a heroic installation plan substantially in excess of what the Commission has required in other services, but, if most of the permits were to be built, the *NPRM*'s principal proposal would be far beyond the current production capacity of the 38 GHz manufacturers and would require an absurd amount of capital.

At the present time, there are in excess of 650 outstanding 38 GHz authorizations encompassing an average of 15,000 square kilometers. The four-links-per-hundred-square-kilometers proposal would require over 395,000 links (over 790,000 radios) before the end of calendar 1997. At an assumed average of $25,000 per link for a pair of radios and associated antennas and electronics plus installation costs, the total capital needed would be over $4 billion.

If it were assumed that a lesser, and more realistic number, of permit holders

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[13] Section 21.708 of the Rules requires only that a permit holder certify that it is in "operation." The Rules do not define what is meant by "operation;" and we have been unable to locate any Commission decision or public notice that defines the term. The industry practice has been to certify operational status with the installation of the one link no matter the size of the area.

would seek to perfect their licenses, the production needs to meet the *NPRM*'s proposal would still be beyond current production capacity. For instance, the two current operators (ART and WinStar) hold over 130 permits and licenses combined. Their service areas total approximately 1,178,000 square kilometers, many of which would require construction of two to four channels. A requirement of four links per hundred square kilometers would require ART and WinStar to install about 95,000 radios in 18 months from the issuance of the new rule. This appears to be beyond the current production capacity of domestic manufacturers.

The Construction Requirement Should Use the Commission's Principle Suggested Format But With a More Achievable Standard. It is clear then that the *NPRM* suggestion of an 18 month window to install 4 links per 100 square kilometers would be unreasonable.[14] ART does agree, nonetheless, that there must be a strict construction requirement. ART is confident that one can be devised that balances the need to avoid warehousing with demand, available capital and manufacturing capacity.

The construction requirement must take into account differences both in the size of each license area and its demand characteristics (as represented by population density). A requirement, such as the fifteen links regardless of size that the *NPRM* suggests as a

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[14] *See, e.g.,* In the Matter of Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services and Suite 12 Group Petition for Pioneer's Preference, FCC 95-287 (CC Docket No. 92-297), paras. 113, 116 (1995) [hereinafter *LMDS*], where the Commission backed away from its earlier proposal to require licensees to cover 90% of their territory within three years because "we are aware that equipment prices would be driven up, possibly to an uneconomic level, if we were to require too rapid a build-out."

possible alternative,[15] is contrary to the Commission's well-chosen models that take into account differences in area and demographics among license areas. Such an approach, furthermore, would stand the rationale on its head by imposing a comparatively less onerous hurdle on less prudent licensees who opted for the maximum-sized areas heedless of sound business planning. The permittee should be required to build throughout its area or lose it to someone who will.

Although the *NPRM* does not suggest that the construction benchmarks should be staggered over time -- that is, increasing with the passage of time -- ART strongly recommends that a time staggered approach be adopted. This is the rule in most other services (e.g., both narrowband and broadband PCS, LMDS and SMR)[16] where multiple facilities are to be installed over a wide area.

ART's recommendation is that the Commission impose a five year construction requirement of: *(1) one link per 2500 square kilometers by the end of the first 18 months; (2) one link per 250 square kilometers by the end of the first 48 months; and (3) two links per 250 square kilometers by the end of the first 60 months*[17]. This requirement is sufficiently stringent to deter warehousing and speculation but still be financially viable and within the production capacity of the industry. A total of 7,000 radios would have to

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[15] *NPRM* at para. 107.

[16] *Infra* note 24.

[17] In an *ex parte* presentation on November 11, 1995, ART proposed a construction requirement of six links the first eighteen months per license area and six additional links each twelve months thereafter. Upon further reflection and investigation of the projected domestic manufacturing capacities, ART has concluded that its original proposal was too lenient and failed to account for differences among market characteristics.

be produced, purchased and installed within the next 24 months (assuming that the rules are adopted at the end of the next six months), 70,000 radios within 54 months (circa 2000 to 2001) and 140,000 radios within 66 months.

After careful consideration and investigation, ART has concluded that its counterproposal is a fair and reasonable balance of the competing interests. If, nevertheless, the radios prove not to be available at reasonable prices or the demand proves to be less than a conservative projection of current demand, the construction requirements could always be lessened -- for good cause shown. Experience teaches that it would be more difficult and less equitable to increase the construction requirements if they prove to be too permissive initially.

The Construction Benchmarks Should Include A Population Factor. The construction benchmark should take into account the differing characteristics among markets. A market with a rural, largely non-commercial population would not have anywhere near the demand of a large urban market. Ideally, the Commission would use a surrogate or series of surrogates that would reflect the actual extent of demand in a given area. Such surrogates might include employee density, the number, size and industrial classification of commercial buildings, etc. The dilemma is that there is no universal agreement regarding what surrogates and what weight to assign to each surrogate. Accordingly, it is probably best to use population as a measure to size market demand.[18]

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[18] Population is the most widespread measure for assigning values to markets in use by private industry for capital raising and private transfers. And it is the surrogate used in the other wireless industries. It is used in the PCS, SMR and LMDS services. In narrowband PCS, for instance, the Commission rejected its original proposal based upon the number of base stations in favor of a population-based requirement. *See* Narrowband

The question then becomes how to apply the population determinative to the construction requirement. ART suggests that the Commission consider an approach that reduces the percent of the basic construction requirement as the average population within the total license area diminishes.

ART recommends the following population density approach. The population density would be determined for each subsection under the construction requirement then applicable (i.e., either 2500 or 250 square kilometers) based upon census tracts, obtained from the most recent statistics projected forward by the U. S. Census Bureau. Then an average population density would be derived for the appropriate subsection based upon the cumulative total population densities divided by the total number of subsections. The construction requirement per subsection would be adjusted accordingly to the following formula: (1) more than 10,000 population, 100% of the basic requirement; (2) 5-10,000, 75% of the basic requirement; (3) 3-5,000, 50% of the basic requirement; and (4) less than 3,000, 25% of the basic requirement.[19]

The Construction Benchmarks Must Ensure That The Installations Are Customer-Driven And Not A Regulatory Artifice. ART agrees wholeheartedly with the Commission that the permittee be required to install links that are intended to be "permanent" as well as

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Personal Communications Services, *Memorandum Opinion and Order*, 9 FCC Rcd 1309, 1313-1314 (1994).

[19] Applying a smaller population differential to each sub-block being used to determine the construction requirements would be a more accurate reflection of the differences among areas, but it would be more complex to administer. The administrative time that would be required of each licensee in that instance would appear to outweigh the benefit. The population totals should be based on the most recent official projections by the U.S. Census Bureau.

"operating." It is far too easy, otherwise, for the benchmarks to be met by transportable, temporary radio pairs that are shortly moved to another location. The construction requirement's primary goal -- prevention of warehousing -- is scarcely satisfied under those circumstances.

The question then is what is to be meant by these two phrases -- "permanent" and "operational." The Commission should make it clear that to be "operational" the link must be carrying communications traffic for an unaffiliated third party, on a revenue producing basis.

One conundrum is bound to arise. There will be occasions when a link is taken out of service because of unforeseen changed circumstances. One certain occurrence is discontinuation of service by a customer. Customer "churn" over the life of the license is bound to occur for reasons unrelated to the quality of the service. There is no reason for a 38 GHz licensee to install a link or continue to operate a link once the customer has discontinued service. One of the principal public interest advantages of 38 GHz is that it is deployed largely after a service request is received and can be easily redeployed when service is no longer needed at a given location. To require that a link continue operating after the customer has discontinued payment obviously would make no economic sense. The dilemma for the Commission is to be able to distinguish unforeseen customer churn from a situation where the link was never intended to have "permanent" status.

ART has a two-fold resolution to this situation. First, where the discontinuation of service causes a licensee to fall below the Commission's construction threshold, the licensee should be required to replace the link(s) but be given a "reasonable" period to

time to do so. Three months (ninety days) appears to fall within the zone of reasonableness.[20] Second, ART proposes that the Commission require (i) that each link be subject to a written agreement or purchase order, (ii) that the unaffiliated customer be paying for the link and (iii) that the licensee be required to certify that it has met the construction requirements. Furthermore, the Commission should require (iv) that these agreements be filed, on a non-public, confidential basis at the time that the certification is filed.

We recognize that this last suggestion would engender the submission of a significant amount of material, and that the Commission in recent years has shied away from requirements such as this. However, the paper work can be eliminated by requiring the filings to be on disk. The Commission staff need not review each submission but conduct (or announce that is prepared to conduct) tests on a random selection basis, with the selection criteria kept confidential from the public. This approach should not create a significant burden on the staff while acting as a considerable deterrent to scofflaws.

The Construction Benchmarks Should Be Applied On A Channel-by-Channel Basis But Without Loading Requirements. The construction requirement also should be applied on a channel by channel basis. Thus, each channel would be subject to its own requirement. If, for instance, the license covered two channels, then in each subsection the

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[20] We note that, in its discussion of the grandfathering of established links in the situation where a licensee loses its area-wide license cause it has failed to meet the construction requirements (*NPRM* at para. 108), the Commission proposes to rescind grandfathered status if a link ceases operation for thirty consecutive days. ART believes that thirty days is too brief in that situation as well and would urge the adoption of a ninety requirement.

total benchmark would be doubled and each channel would have to be serving the requisite number of links without duplicating any of the traffic carried on the other channel.

The *NPRM* advances two suggestions in the "channel loading" area, which, however laudable, are not practical. The Commission would require that (1) the licensee show that the traffic on one channel block "can not be reaccommodated in another channel block" and that (2) "all such links be capable of carrying a reasonable amount of communications traffic." The *NPRM* suggests, as a "capacity or usage" factor, a "minimal equivalent digital efficiency of 1 bps/Hz."[21] The apparent genesis of these suggestions is a desire to ensure that each channel is "fully loaded" in order to prevent circumvention of the construction requirements.

(1) The evident vice that the *NPRM* seeks to address by requiring a demonstration that the traffic on one channel cannot be "reaccommodated" on another channel is warehousing of additional channels in a given area. ART agrees with the goal, but does not believe that the suggested means of achieving it are practical. The Commission does not, in fact, suggest what criteria would be used in making such a demonstration, and ART does not believe that any useful criteria can be devised.

The variables are too many and too varied in their relation to each other from one situation to the next for the Commission to be able to develop an impartial, workable and timely set of criteria. For instance, in deciding which of two channels allocated to a license area to use for the next customer's traffic, a complex set of interference calculations might have to be examined, depending on the location and density of the route. These

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[21] *NPRM* at para. 107.

calculations are relatively uncomplicated now but promise to become increasingly complex as traffic increases and as new entrants commence providing service. The various interference possibilities (based in part upon guesstimates of future traffic both internal and from a number of adjacent channel and co-channel/adjacent area licensees) would have to be considered in conjunction with multiple and varying design trade-off decisions. These design decisions would vary by time, circumstances and location. The choice among the design possibilities would, among other matters, (i) after accounting for the interference variables, balance (ii) the grade of service desired, (iii) the optimum number of hops, (iv) the location, cost and availability dates of different antenna sites along the optimal path, (v) the cost/availability/timing/ benefit of alternative paths and (vi) predictions of the type and nature of future traffic growth along the same routes.

Given this complexity and the fact that none of the variables would have the same input factors or be given the same weight from one situation to the next would make it impossible for the Commission to administer its channel loading criteria impartially (even assuming it were willing and had the necessary staff resources). It would be equally impossible for licensees to determine whether they had satisfied the objective in their system designs. Accordingly, however sound this concept might appear on paper, it is impractical in implementation.

(2) The *NPRM*'s desire to require a "reasonable" amount of traffic over each link by, for instance, imposing a one bit per Hertz standard is unnecessary, impractical and would stifle innovation. The configuration of the radio equipment deployed in the field falls well short of satisfying this requirement. Most of the currently-deployed radios are